INDIAN INSTITUTE OF TECHNOLOGY PATNA

CS226-Hardware Lab

Lab 5

Simulate the following in Logic-sim ( design 7483 equivalent design using basic gates)

1. To implement a binary full-adder with a dual 4-to-1-line multiplexer and a single inverter.

1. Study 7483 and design an 8-bit adder/subtractor with overflow detection using 7483s.



1. Write a minimized Boolean equation for the function performed by the circuit and verify the same using discrete logic.

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Implement the function f using

(a) an 8:1 multiplexer

(b) a 4:1 multiplexer and one inverter

(c) a 2:1 multiplexer and two other logic gates



5: Write Boolean equations and verify.

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**Submission:**

Submit your .circ file containing your various transistor-level/logic level implementations. Hand written report is required for problems 3, 4 and 5. Show the simulations to TAs.

* The simulation files p1.circ, p2.circ, p3.circ, p4.circ, p5.circ
* Zip the above five files. Zip file name is your role number.

Course work submission through Email: [cs225.iitp@gmail.com](mailto:cs225.iitp@gmail.com)

(use email subject Lab5\_Logicsim\_your roll number).

This work is due on: : 4th Feb